

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY
(Chapter II of the Patent Cooperation Treaty)


(PCT Article 36 and Rule 70)

Rec'd PCT/PTC 15 JUL 2005

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Applicant's or agent's file reference PD53551PC		FOR FURTHER ACTION		See Form PCT/PEA/416
International application No. PCT/EP2004/000178		International filing date (day/month/year) 14.01.2004	Priority date (day/month/year) 17.01.2003	
International Patent Classification (IPC) or national classification and IPC H01Q9/04, H01Q19/00, H01Q1/24				
Applicant SONY ERICSSON MOBILE COMMUNICATION AB et al.				
<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 6 sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input checked="" type="checkbox"/> sent to the applicant and to the International Bureau) a total of 1 sheets, as follows:</p> <p><input checked="" type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p>b. <input type="checkbox"/> (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p>				
<p>4. This report contains indications relating to the following items:</p> <p><input checked="" type="checkbox"/> Box No. I Basis of the opinion</p> <p><input checked="" type="checkbox"/> Box No. II Priority</p> <p><input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p><input type="checkbox"/> Box No. IV Lack of unity of invention</p> <p><input checked="" type="checkbox"/> Box No. V Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p><input type="checkbox"/> Box No. VI Certain documents cited</p> <p><input type="checkbox"/> Box No. VII Certain defects in the international application</p> <p><input checked="" type="checkbox"/> Box No. VIII Certain observations on the international application</p>				
Date of submission of the demand 02.08.2004		Date of completion of this report 22.10.2004		
Name and mailing address of the international preliminary examining authority:  European Patent Office - P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk - Pays Bas Tel. +31 70 340 - 2040 Tx: 31 651 epo nl Fax: +31 70 340 - 3016		Authorized Officer Van Dooren, G Telephone No. +31 70 340-2952		



**INTERNATIONAL PRELIMINARY REPORT
ON PATENTABILITY**

International application No.
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Box No. 1 Basis of the report

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
- ☐ This report is based on translations from the original language into the following language , which is the language of a translation furnished for the purposes of:
- ☐ international search (under Rules 12.3 and 23.1(b))
 - ☐ publication of the international application (under Rule 12.4)
 - ☐ international preliminary examination (under Rules 55.2 and/or 55.3)
2. With regard to the **elements*** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report):*

Description, Pages

1-7 as originally filed

Claims, Numbers

1-9 filed with the demand

Drawings, Sheets

1/4-4/4 as originally filed

- ☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing
3. ☐ The amendments have resulted in the cancellation of:
- ☐ the description, pages
 - ☐ the claims, Nos.
 - ☐ the drawings, sheets/figs
 - ☐ the sequence listing (*specify*):
 - ☐ any table(s) related to sequence listing (*specify*):
4. ☒ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
- ☐ the description, pages
 - ☒ the claims, Nos. 1
 - ☐ the drawings, sheets/figs
 - ☐ the sequence listing (*specify*):
 - ☐ any table(s) related to sequence listing (*specify*):

* If item 4 applies, some or all of these sheets may be marked "superseded."

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Box No. II Priority

1. ☒ This report has been established as if no priority had been claimed due to the failure to furnish within the prescribed time limit the requested:
☒ copy of the earlier application whose priority has been claimed (Rule 66.7(a)).
☐ translation of the earlier application whose priority has been claimed (Rule 66.7(b)).
2. ☐ This report has been established as if no priority had been claimed due to the fact that the priority claim has been found invalid (Rule 64.1). Thus for the purposes of this report, the international filing date indicated above is considered to be the relevant date.
3. Additional observations, if necessary:

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	8
	No: Claims	1-7,9
Inventive step (IS)	Yes: Claims	
	No: Claims	1-9
Industrial applicability (IA)	Yes: Claims	1-9
	No: Claims	

2. Citations and explanations (Rule 70.7):

see separate sheet

Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

see separate sheet

Re Item I

Basis of the report

1. The amendments filed with the demand introduce subject-matter which extends beyond the content of the application as filed, contrary to Article 34(2)(b) PCT. The amendments concerned are the following formulation:
 - said antenna patches comprising *a variable capacitance feeding*.

Apart from the fact that the concept of a variable capacitance has only been discussed in respect of the equivalent circuit as shown in figure 3, the examiner is of the opinion that the formulation '*a variable capacitance feeding*' extends beyond the original disclosure, as there is only support for *a frequency-dependent capacitance* between the patches.

2. Substantive examination will be carried out on the claims on file in view of the comment and interpretation of the claim given in point 1.

Re Item V

Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. The following documents are referred to in this communication:
 - D1 : US 5 764 190 A (MURCH ROSS DAVID ET AL) 9 June 1998 (1998-06-09)
 - D2 : EP 0 332 139 A (TOYODA CHUO KENKYUSHO KK) 13 September 1989 (1989-09-13)
2. The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claim 1 is not new in the sense of Article 33(2) PCT.
- 2.1 The document D1 discloses (the references in parentheses applying to this document) an antenna arrangement (4) to be provided in a portable communication device, wherein the antenna arrangement (4) comprises:
 - a first antenna patch (10,11) to be connected to a first feeding potential, and
 - a second antenna patch (7) to be connected to a second feeding potential,

said antenna patches (7,10,11) comprising a variable capacitance feeding, wherein the first and the second patches (7,10,11) are separated by a gap (cf. fig. 2) and have a length approximately equal to each other.

3. Dependent claim 2-9 do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of novelty and/or inventive step (Article 33(3) PCT), see documents D1 and D2 and the corresponding passages cited in the search report, because the additional features present in dependent claims 2-7,9 are all disclosed in D1 (cf. figs. 2,3,11).
- 3.1 As to dependent claim 8, Document D1, which is considered to represent the most relevant state of the art, discloses (cf. figs. 2,3) an antenna arrangement from which the subject-matter of claim 8 differs in that the radio circuit is connected to the first antenna patch at an edge thereof.

This additional technical feature is considered to be a slight constructional change of the feed point of the first patch of the document D1, which comes within the scope of the customary practice followed by persons skilled in the art, especially as the advantages thus achieved can be readily contemplated in advance. Consequently, the subject-matter of claim 8 also appears to lack an inventive step. See for example D2, figs. 1,7.

Re Item VIII

Certain observations on the international application

1. The statement in the description on page 2, viz. *'According to a first aspect of the invention...'* implies that the subject-matter for which protection is sought may be different to that defined by the claims, thereby resulting in lack of clarity (Article 6 PCT) when used to interpret them. The same is true for the statement on page 7, l. 30-33.
2. Contrary to the requirements of Rule 5.1(a)(ii) PCT, the relevant background art disclosed in the documents D1 and D2 is not mentioned in the description, nor are

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(SEPARATE SHEET)**

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these documents identified therein.

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1. Antenna arrangement to be provided in a portable communication device, wherein the antenna arrangement (10) comprises:
a first antenna patch (12) to be connected to a first feeding potential (V1), and a second antenna patch (14) to be connected to a second feeding potential (V2), said antenna patches (12, 14) comprising a variable capacitance feeding, wherein the first and the second patches (12, 14) are separated by a gap (17) and have a length approximately equal to each other.
2. Antenna arrangement according to claim 1, wherein the gap (17) comprises dielectric or forming material.
3. Antenna arrangement according to claim 1 or 2, wherein the dielectric material has low dielectric constant.
4. Antenna arrangement according to any one of the claims 1-3, wherein the length of the gap (17) is between 0,1 to 0,3 % of a wavelength coming from/to a source (5).
5. Antenna arrangement according to any one of the claims 1 to 4, wherein the second feeding (V2) potential is ground potential.
6. Antenna arrangement according to any one of the claims 1-5, wherein the 25 antenna patches (12, 14) have a length approaching a quarter wavelength at the operating frequency band.
7. Antenna arrangement according to any one of the preceding claims, wherein the connection (18) between the first feeding potential (V1), provided by radio circuit (a source) (5) and first patch (12) is screened.
8. Antenna arrangement according to any one of the preceding claims, wherein the radio circuit (5) is connected to the first antenna patch (12) at an edge thereof.
9. Portable communication device, said device (200) comprising a chassis (210) having a microphone (220), a speaker opening 230, and a keypad (240), wherein the device (200) further comprises an antenna arrangement (10), said antenna arrangement (10) comprising an antenna arrangement according to claim 1.

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AMENDED SHEET

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